



PATTERN OF LEUKEMIAS AT GOVERNMENT MEDICAL COLLEGE, JAMMU

Dr. Bharti D Thaker

Senior resident department of Pathology, GMC Jammu.

Dr. Arti Devi

Md Medicine, GMC Jammu.

Dr. K.K.Kaul

Professor department of Pathology, GMC Jammu.

ABSTRACT A 10 year (8 years retrospective and 2 year prospective) study of leukemias was done in Department of Pathology, Govt. Medical college, Jammu. The aim was to study the pattern and spectrum of leukemias. A total of 600 cases of haematological malignancies which were diagnosed during the study period by means of available haematological laboratory methods and histological examinations were analysed. Out of 600 cases, Leukemias cases were 512 in no. The distribution of various haematological malignancies recorded were: ALL (36.7%), AML (29.7%), CLL (7.3%), CML (11.7%). Male patients were more as compared to female. The age range was different for various types of leukemias. ALL was commonly seen in children, AML and CML cases were more common in adults with lesser cases in children. CLL cases were not seen in children and patients <30 years age. These were common in older patients. The distribution pattern of various leukemias were comparable to other Indian as well as Asian studies but different from western studies. Difference may be attributed to late presentation, poverty, poor health care system and accessibility to the patient.

KEYWORDS : Pattern, Leukemia.

INTRODUCTION:

Leukemia is any myeloid or lymphoid malignancy that largely involves the peripheral blood and bone marrow. They form significant proportion of lymphohaematopoietic malignancies and affects all the individuals of all age groups throughout the world. Subtypes are identified on the basis of cell origin as lymphocytic or myeloid and clinical course (1). Important types of leukemias are:

- Acute lymphoblastic leukemia
- (ALL)
- Chronic lymphocytic leukemia
- (CLL)
- Acute myelogenous leukemia (AML)
- Chronic myelogenous leukemia (CML) and chronic myelomonocytic leukemia.

The cell distribution of leukemias observed in India is different from the western countries. In USA, it was reported that haematological malignancies accounted for approx. 6-8% of cancer incidence in both sexes. The incidence of acute leukemia being 34 per million population with chronic leukemia more common than acute leukaemia (2). The relative proportion of leukemias in USA is 30.4%. In India, at present 0.8 million new cases of cancer are diagnosed each year, 3 million are present at any time. Lymphohaematopoietic malignancies constitute 9.5% of cancers in men and 5.5% in women (3). Acute leukemia comprised about 50% of all leukemias. Approximate frequencies of various leukemias in India are CML (40%), ALL (35%), AML (15%) and CLL (10%) (4).

Leukemias are a major burden to afflicted patients, medically, financially, psychologically and spiritually. The present study was undertaken to determine the distribution and spectrum of various leukemias reported at our institution so as to estimate the overall disease burden in Jammu and to compare with the findings elsewhere.

MATERIAL AND METHODS:

The present study was conducted in the Department of Pathology, Government Medical College, Jammu, w.e.f. 1st September 2006 to 31st August 2016. Detailed clinical history, general and systemic examination findings, Complete haematological profile of the patient was done, differential leucocyte count (DLC) done on peripheral blood film (PBF). Bone marrow examination was done to confirm the diagnosis.

Informed written consent of the patients was taken after explaining all the risks and benefits of the study.

Aim- To study the pattern of leukemias.

RESULTS: Out of 600 cases of haematological malignancies, 512 cases of leukemias were found. 205 (40%) of them were children (0-15

years) while 307 (60%) were adults (>15 years), the difference between the two being statistically significant ($p < 0.01$) (Table 1).

The sex distribution of leukemias were recorded and overall more male cases were found 298 (57.98%) as compared to females 214 (42.02%). Male: female ratio was found to be 1.4:1. The difference between the genders was also found to be significant ($p < 0.01$) (Table 2)

Out of 512 leukemia cases in our study, Acute leukemias were found to be more common (77.7%) than chronic leukemias (19%). Among the acute leukemias ALL (42.9%) cases were more than AML (34.7%) cases, whereas among chronic leukemias CML (13.6%) were found to be more common than CLL (8.6%).

Amongst 220 cases of ALL, cases of L-1 (61%) were found to be most common, followed by L-2 (37.2%) and least common were L-3 (1.8%) cases. Among 178 AML cases, M2 (50.6%) cases were the most common, followed by M4 (21.4%), M1 (13.5%) and equal number of M3 and M5 (6.7% each). CLL (95.4%) cases were found to be more common than CLL/PLL (4.6%) cases. Among 70 CML patients, only 2 cases were found to be in accelerated phase (2.8%). Majority of cases of CML were found to be in chronic phase (97.2%). Generalized weakness (75.3%) and Fever (56.7%) were the most common presenting symptoms followed by weight loss (39.3%), bone pains (31.3%) and bleeding manifestation (39.7%) (petechiae, purpura ecchymosis and melena). Pallor (91%) was the most frequently observed sign along with organomegaly (55.3%) followed by lymphadenopathy (52.3%) and bony tenderness (25%) (Table 5).

DISCUSSION

Out of 512 cases of leukemias, 205 (40%) were children (0-15 years) while 308 (60%) were adults (>15 years), the difference between the two being statistically significant ($p < 0.01$) (Table 1). In our study maximum no. of ALL cases were seen in age group 0-10 years (64.45%) ranging from 10 months to 60 years with a mean age of 12.3 years. This is similar to studies done by Rego MF et al (5), Baviskar J et al (6), however Idris M et al (7) reported mean age for ALL as 7 years which was lower than seen in our study. Among AML cases, the patients were seen with age ranging from 6 years to 72 years with a mean age of 31.4 years. The highest no of cases were seen between 21-30 years (20.02%). This was similar to studies done by Rego MF et al (5), Harani MS et al (8) however Capra M et al (9) reported the mean age for AML as 42 years which was higher than our study.

Total no. of CML cases recorded were 70 with age range of 16-72 years and mean age of 22 years. Maximum no. of cases were seen among 41-50 years (42.8%) with less no. of cases in children and older age group. Similar findings were seen in study by Idris M et al (7), Alao et al

al).However Dikshit et al(10) mentioned highest no.of cases between 55 to 74 years.

CLL cases were found to have age range of 35-75 years and mean age of 53.5 years with maximum no.of cases between 61-70 years .No case was recorded in patient less than 30 years.This was similar to study done by Alao OOet al(11) , Al Ghazaley J et al(12),Agrawal N et al(13).

The sex distribution of leukemias were recorded and overall more male cases were found 297 (57.98%) as compared to females 215 (42.02%). Male: female ratio was found to be 1.4:1. The difference between the genders was also found to be significant (p<0.01) (Table 2).Similar findings were seen in study done by Idris M et al, (7)Alao oo et al (11)and Baviskar J et al(6).In ALL 61.8% cases were males and 38.3% cases were found to be females.In AML almost equal no of cases were seen between males and females with male to female ratio of 1.02:1.In CML 60% male cases and 40% female cases were seen.In CLL majority of cases were seen in males (68.18%) with 31.82% cases in females.

In the present study, leukemia (85.3%) was found to be comprise of 512 cases out of 600 cases of haematological malignancies. Acute leukemias were found to be more common than chronic leukemias similar to studies conducted by Al-Ghazaley *et al* (12) and Kulshrestha and Sah(14); however, Yamamoto and Goodman (15)mentioned chronic leukemias to be more common than acute leukemia. ALL was found to be more common than AML, similar to study done by Rego *et al* (5) . whereas AML was found to be more frequent than ALL in study by Sachdeva *et al*(16). Among chronic leukemia, CML cases were more frequent than CLL cases. This observation is comparable to that of Kagu *et al*(17).Rajesh *et al* (18) . whereas Rodriguez *et al* (19) found CLL cases to be more frequent than CML cases.

Among ALL, L1 cases were the most common followed by L2 and L3 being the least common subtype similar to that found in studies done by Kulshrestha and Sah(14) . Among AML, M2 was the most common followed by M4 and M5 being the least common. This observation was similar to study done by Kulshrestha R *et al* (14) .

Majority of CML cases were in chronic phase with only two cases were recorded in the accelerated phase This observation is similar to that of Kulshrestha *et al* (14) .

Although CLL it is the most common leukemia affecting adults in western countries.Incidence of CLL is lower in india (1.95-8.8%). In our study CLL was found to be the least common similar to the study done by Agarwal N *et al*(13) ,Baviskar b *et al* (6) .

In our study, generalised weakness and fever were the most common presenting symptoms, followed by weight loss, bone pains and bleeding manifestations. Pallor was the most frequently observed sign along with organomegaly, followed by lymphadenopathy and bony tenderness. Similar findings were seen in a study by Idris M *et al* (7) .

Conclusion And Recommendation:

Present study concluded that acute leuemias was more common than chronic leukemias.Male predominance was seen in all types of leukemias . Age was important factor as specific groups were commonly seen in some types of leukemias.ALL was commonly seen in children ,AML and CML cases were more common in adults with lesser cases in children.CLL cases were not seen in children and patients <30 years age .These were common in older patients. Clinicohaematological profile study of the patient makes an important milestone in diagnosis of leukemias so as to provide better patient care.

Table 1: Distribution of haematological malignancies among children and adults

Age	Number (%)
Children (<15 years)	205 (40.0)
Adults (>15 years)	307 (60.0)
Total	512 (100.0)

Table 2: Sex distribution of various types of Haematological Malignancies

Sex	ALL	AML	CML	CLL
Male n(%)	136 (61.8%)	90 (50.6%)	42 (60%)	30 (68.18%)

Female n(%)	84 (38.2%)	88 (49.4%)	28 (40%)	14 (31.82%)
Total	220	178	70	44

Table 3: Distribution pattern of haematological malignancies

Haematological malignancies	Number (%)
Acute lymphoblastic leukemia (ALL)	220 (43)
Acute myeloid leukemia (AML)	178(35)
Chronic lymphocytic leukemia (CLL)	44 (8)
Chronic myelogenous leukemia (CML)	70 (14)

Table 4: Distribution of subtype of haematological malignancies

Type	Subtype	Number (%)
ALL (220)	ALL-1	134 (61.0)
	ALL-2	82 (37.2)
	ALL-3	4 (1.8)
AML (178)	AML-M0	2 (1.1)
	AML-M1	24(13.5)
	AML-M2	90 (50.6)
	AML-M3	12 (6.7)
	AML-M4	38 (21.4)
CLL (44)	CLL	42 (95.4)
	CLL/PLL	2 (4.6)
CML (70)	CML-cp	68 (97.2)
	CML-ap	12(2.8)

Table 5: Clinical presentation of haematological malignancies

Clinical presentation	Number (%)
Pallor	466 (91.0)
Weakness	385(75.3)
Fever	290(56.7)
Bone pains	160(31.3)
Body tenderness	128 (25.0)
Weight loss	201(39.3)
Bleeding	203 (39.7)
Lymphadenopathy	267 (52.3)
Organomegaly	283 (55.3)

REFERENCES:

- National Cancer Institute. What you need to know about leukemia. November 16, 2010.
- Wu X, Groves FD, McLaughlin CC et al. Cancer incidence patterns among adolescents and young adults in the United States. *Cancer Causes Control*, 2005.
- Bhutani M, Vora A, Kumar L and Kochupillai V. Lympho-haematopoietic malignancies in India. *Medical Oncology* 2002; 19(3): 141-150.
- Essentials of Haematology, Kwathalkar, 2006.
- Rego MF, Pinheiro GS, Metzke K, Lorand-Metze. Acute leukemia in piaui: comparison with features observed in other regions of Brazil. *Brazilian Journal of Medical and Biological Research* 2003; 36(3):331-337.
- Baviskar JB.Incidence of acute and chronic leukemias in rural area at tertiary care teaching hospital- A 5 year study.*Journal of pathology, oncology, October –december 2016;3(4):710-713.*
- Idris M, Shah SH, Fareed J, et al. An experience with sixty cases of haematological malignancies. *J Ayub Med Coll Abbottabad* 2004; 16(4): 51-54.
- Harani MS, Adil SN, Shaikh MU et al. Frequency of FAB subtypes in AML patients at Aga khan university hospital Karachi. *Journal of Ayub medical college, Abbottabad* 2005;17(1):26-29.
- Capra M, Vilella L, Pereira WV et al. estimated no. of cases ,regional distribution and survival of patients diagnosed with AML between 196-2000 in riogrande do sul, Brazil. *Leukemia, Lymphoma* 2007; 48(12):2381-2386.
- Dikshit RP, Nagrani R, Yeole B . Changing trends of CML in greater Mumbai, india over a period of 30 years. *Indian J Med Pediatr Oncol*. 2011; 32(2):96-100.
- Alao OO, Bazuaye GN, Halim NKD, et al. The epidemiology of haematological malignancies at the University of Benin Teaching Hospital. *The Internet Journal of Epidemiology* 2011; 9(2): 1540-2614.
- Al-Ghazaly J, al-Selwi AH, Abdullah M et al. Pattern of haematological diseases diagnosed by bone marrow examination in Yemen: a developing country experience. *Clin Lab Haematol* 2006; 28(6): 376-381.
- Agarwal N, Naithani R, Mahapatra M et al. Chronic lymphocytic leukemia in india-A clinicopathologic correlation: *Haematology* 2007; 12(30):229-33.
- Kulshrestha R and Sah SP. Pattern of occurrence of leukemia at a teaching hospital in eastern region of Nepal. *J Nepal Med Assoc* 2009; 48(173): 35-40.
- Yamamoto JF and Goodman MT. Pattern of leukemia incidence in United States, 1997-2002. *Cancer Causes Control* 2008; 19(4): 379-390.
- Sachdeva MU, Ahluwalia J, Das R et al. Role of FAB classification of acute leukemias in era of immunophenotyping. *Indian journal of Pathology and Microbiology* 2006; 49(4): 524-527.
- Kagu MB, Ahmed SG, Bukar AA, Mohammed AA, et al. Spectrum of haematological malignancies and survival outcomes of adult lymphomas in Maiduguri, north eastern Nigeria. *Afr J Med Med Sci*. 2013; 42(1): 5-14.
- Rajesh SL, N. Bhubon Singh, Sharmila Laishram et al. Pattern of Leukaemias in a Tertiary Care Hospital. A 5 Years Retrospective Study of 103 Cases. *Indian Medical Gazette* 2013; 175.
- Rodrigue Z, Abreu D, Bordoni A and Zucca E. Epidemiology of haematological malignancies in Europ. *Annals of oncology* 2007; 18(1): 13-18.